



## Aviation Human Factors Industry News February 24, 2008

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### NTSB: Poor maintenance work caused fatal helicopter crash

**SHORT-HANDED** A mechanic told the NTSB that the crew was understaffed and forgot to check parts.

A federal agency that investigates aircraft accidents cited **shoddy maintenance** by an **overworked mechanical** staff in the crash of a helicopter in Ponte Vedra Beach last year that killed two people.



The National Transportation Safety Board said a mechanic with the company that owned the helicopter told investigators that **missing and loosened hardware** that caused the chopper to crash near the ocean was the result of **understaffing and staffers being "pulled in all directions by company personnel."**

Silver State Helicopters at Craig Municipal Airport already **has changed policies and procedures** to ensure **more mechanics** per shift, more thorough inspections and **fewer interruptions** for mechanics, according to the NTSB report, obtained Monday by the Times-Union.

Pilot instructor Tamara Williams, 38, and student passenger Justin Wyatt Duncan, 24, were killed when the single-engine helicopter crashed March 27, minutes after leaving the airport. An initial crash report said **key bolts, nuts and washers were missing from the flight control system** and that Williams was the first pilot to fly the **aircraft after maintenance** was performed on that system.

The latest NTSB report says the mechanic who worked on the helicopter told investigators that Silver State **had too few maintenance personnel** and that, a few nights before the crash, an **apprentice** wanted to stay late with the mechanic and finish a section of the inspection.

"As a result, the mechanic **forgot to go back and secure the hardware**," the report says. A 30-minute test flight didn't reveal the problem, the report says.

None of the maintenance staff was named in the report.

Silver State's lead mechanic in Jacksonville told investigators the staff was **being pushed** to get the helicopter ready to fly while he also **was involved in working** on several other aircraft, **shopping for tools** and **preparing an estimate** for a crash repair in Melbourne.

The company operates a flight-training academy with 27 instruction facilities, including four in Florida and one in Georgia. The Jacksonville location opened in November 2006.

"Silver State Helicopters **grew faster than its safety and maintenance were able to grow**," said attorney Donald Maciejewski, who represents Williams' family in their lawsuit against the company. "It's like a surgeon. ***You don't interrupt a surgeon.***"

Silver State attorney John Murray said Monday that he hadn't seen the report. He has argued in court that the company should be immune from the lawsuit's negligence claims because Williams was an employee covered by workers compensation.

At NTSB's request, the company's training director **provided a list of changes** that have been made as a result of the accident. They include requiring **at least two mechanics per shift, two sets of initials on inspections and notice in maintenance logbooks if any flight controls or engine controls are removed.**

"**Mechanics will not** be pressured, interrupted or distracted by any pilots, students, general managers or any personnel," the report says

## Part's design is blamed in LAX blast

General Electric's **"inadequate design"** of a widely used engine part led to an explosion on an American Airlines jetliner during a **ground test** nearly two years ago at Los Angeles International Airport, according to a report released Thursday by the National Transportation Safety Board.



The June 2, 2006, explosion was strong enough to spray debris from the Boeing 767 airliner **more than a half-mile away**, but no injuries were reported.

The blast occurred after **maintenance workers** pushed the jet's throttle during a ground test. The pilot had reported that one of the engines was lagging the other during a climb, the NTSB said.

More than 4,100 of the engines, manufactured by General Electric, are mounted on Airbus A300 and A310 model airplanes, along with Boeing 767, 747 and MD11 model planes worldwide, according to Les Door, a spokesman for the Federal Aviation Administration.

About 1,155 of those airplanes fly in the United States, Door said.

Two months after the explosion, the FAA directed airlines using that type of engine to conduct more routine inspections and **to shave away any sharp edges on the engine's turbine disk**, Door said.

"We believed at the time that shortening the inspection intervals would address the problem," Door said. "We always stay tuned in to new data that comes in, and we won't hesitate to take further action if necessary."

The NTSB said that a **contributing factor** to the explosion at LAX was the FAA's **failure to mandate an accelerated inspection schedule** after a pair of similar blasts involving the same engine part during a ground test in mid-2000, and another shortly after an Air New Zealand jetliner took off in 2002.

In the meantime, General Electric followed the FAA's directive shortly after the LAX blast, said Deb Case, a company spokeswoman.

"The FAA action, following an extensive investigation, is the appropriate course of action to ensure continued flight safety," Case said. "We anticipate inspections will be completed on the entire fleet by the end of the year."

## [Aviation officials say Comair ruling could jeopardize ASAP safety reporting](#)

A judge's controversial ruling in a plane crash **liability case** has sparked concern across the aviation industry about the long-term survival of a popular program that allows air travel **workers to privately report safety violations**.

U.S. District Judge Karl Forester, who is handling several lawsuits stemming from the August 2006 crash in Kentucky that killed 49 people, ruled this week that the **confidential reports can be admitted into evidence**.





The decision was a blow to Comair, the airline being sued, as well as Southwest Airlines, a national pilots union and the Federal Aviation Administration — all of which filed briefs arguing that the **confidential reporting system** could be **undermined** if its information is allowed at trial.

Capt. John Prater, president of the Air Line Pilots Association, which represents Comair and 42 other airlines, said he would ask Congress to get involved to protect the **Aviation Safety Action Program**. It was created to allow pilots, flight attendants, air traffic controllers, **mechanics** and others to report problems without being identified, then pass that information on to FAA to identify trends.

Prater said he knew of no other time an **ASAP** report has been used in a liability case.

“This has the potential of **destroying** the program nationwide,” Prater said of the ruling. “That would be a travesty because these programs have made America’s skies safer.”

Forester, whose ruling Tuesday upheld a similar one in the case last month by a U.S. magistrate judge, said Comair’s argument “brings to mind cymbals banging together very loudly, foretelling the destruction of the **ASAP** program and unsafe skies for the public.”

He said if the reports are supposed to be off limits in lawsuits, Congress or the FAA needs to change the regulations.

Southwest Airlines defended its rival in the friend of the court brief.

“Quite simply, if airline industry personnel know that filing an **ASAP** report has the potential to embroil them in civil litigation, they will be much less likely to report potential safety problems,” Southwest’s attorneys wrote.

Comair spokeswoman Kate Marx said the airline would continue to participate in the **ASAP** program despite the ruling but was exploring legal options. FAA spokeswoman Laura Brown said the agency had supported Comair in its effort to keep the information private.

Marx said she didn’t know what specific information from the database was being targeted in the case and lawyers for the families didn’t immediately return calls Wednesday seeking comment.

Comair 5191 crashed the morning of Aug. 27, 2006, after trying to take off from a Lexington, Ky., general aviation runway that was too short. The plane clipped a perimeter fence and trees before crashing on a farm less than a mile from the airport, killing 49 of the 50 people on board.

## [Airline suspends pilots who overshot Hawaii airport](#)

The Federal Aviation Administration is investigating whether two airline pilots who flew past the airport in Hilo Hawaii by 15 miles last Wednesday were **asleep**.



Go! Airlines flight 1002 left from Honolulu and was expected to land in Hilo around 10 a.m., but had to turn around after flying past the airport.

The pilots did return to the airport and land safely. Go! Airlines is owned by Phoenix-based Mesa Air Group, which also operates Mesa Airlines.

“The issue is currently under investigation,” Paul Skellon, spokesperson for the airline said. “We are fully cooperating with the FAA.”

The airline declined to comment further.

There is no indication that the pilots had to avoid landing because of other aircraft or weather, FAA spokesman Ian Gregor said. Investigators are looking into why the pilots flew past the airport.

Air traffic controllers, which had been tracking the plane by radar, were unable to reach the plane for 25 minutes.

Gregor said the FAA plans to interview the pilots of the 214-mile flight. Under FAA rules, they could be subject to a warning, suspension or license revocation depending on the findings.

Go! Airlines is also conducting their own investigation. Gregor also said that there is no FAA regulation that allows pilots to **sleep** during a flight.

A radar track of the flight provided by the [Web site](http://www.flightaware.com) www.flightaware.com shows the plane remained at 21,000 feet as it flew past Hilo before returning to the airport.



## Qantas safety record under threat

**QANTAS'S** jealously guarded reputation for **never having lost a jet aircraft** is under threat following an accident involving a Boeing 717. The Qantaslink jet carrying 84 passengers from Nhulunbuy, in Arnhem Land, was substantially damaged when it landed heavily after a sudden loss of altitude as it came into land in Darwin earlier this month.



The heavy landing produced **wrinkling in the aircraft's skin** at the rear of the fuselage, suggesting possible damage to the airframe and prompting speculation that the plane is a write-off.

Although the leased aircraft was operated for Qantaslink by National Jet Systems, a write-off would be the first under Qantas colors.

The Australian Transport Safety Bureau, which is investigating, yesterday described the damage to the aircraft as **"substantial"**. Related Sections

An ATSB spokesman was unable to say last week whether the aircraft could be repaired.

"There have been engineers called to inspect the aircraft, but whether it's a write-off or whether it's reparable I don't think is known," he said.

Qantaslink issued a short statement confirming the Boeing 717 operating from Cairns via Nhulunbuy to Darwin was involved in a heavy landing. It said there were no injuries, and passengers disembarked normally.

"The incident is being investigated in consultation with Boeing (and) National Jet Systems, which operates the aircraft on behalf of Qantaslink," Qantas group general manager regional airlines Narendra Kumar said.

"As required, the incident has been reported to the Civil Aviation Safety Authority and the ATSB."

Asked whether the aircraft would be written off, a spokeswoman said: "The investigation is under way and we've got to await the outcome."

The airline has an **enviable reputation for air safety**. A move to repair a Boeing 747-400, which ran off a runway in Bangkok in 1999 costing about \$100m, was widely **seen as a move to protect that record**.

## Cracks found in 14 Qantas jets

The once enviable safety record of Qantas has **suffered another blow**, after air safety investigators confirmed the discovery of **cracks in the "drip shields"** of **nearly half** of the airline's 747 fleet.



The Australian Transport and Safety Bureau yesterday revealed Qantas found cracks in 14 of its 30 Boeing 747-400s, similar to those on a **jet that lost nearly all of its electrical power** on approach to Bangkok on January 7.

The bureau in its preliminary report said "the event was less serious than first reported" regarding the London to Bangkok flight. It said one of the jet's four power generation units was still in operation, along with some systems powered by batteries.

The loss of power occurred after a **blocked sink led water to leak** onto the forward galley of the plane and **through the crack** onto three electrical generator control units underneath.

Cabin crew attempted to soak up the water that covered the entire galley floor using five blankets. Minutes later, the jet's auto-pilot was disengaged, the first officer's displays were "blanked" and **three of the jets four power units lost power**.

"The captain's primary flight display, navigation display, and some other instruments were available in a degraded mode," the report said. Around 27 minutes after losing power, the jet landed.

A Qantas spokeswoman said the airline fixed the cracks discovered on its 747s after the Bangkok incident and was working with investigators and Boeing.

## Trident with Batteries Grn/Grn Led

Trident™ Combination Krypton/LED Headlamp Green Body, 2 White LEDs & 1 Green LED. The patented, multi tasking headlamp by Streamlight®. For the ultimate in convenience, safety and dependability, use the hands free Trident™ headlamp.



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## Fasten your seatbelt. Yes, YOU

What's the point of listening to the safety instructions given by flight attendants? If there's a crash, everybody dies, right?

Most airline passengers apparently feel this way. More than half of passengers in a large study by the National Transportation Safety Board admitted to routinely ignoring the flight attendants, heeding no more than half of their little spiel. But what the flight attendants say can very well save lives, because in any airplane accident, passengers are five times more likely to survive than to die.



Look at what happened at Heathrow Airport in London just last week. A Boeing 777 crash-landed, tearing off the landing gear and disabling the airplane. Yet there were only 13 minor injuries among the 152 passengers.

In 23 of the 27 DC-10 airplanes destroyed in accidents, 90 percent of the passengers have survived. In one 1989 crash in Sioux City, Iowa - a crash so violent that the plane broke into multiple sections and a fireball erupted - 185 of the 296 passengers and crew members survived, including a baby placed on the floor (as instructed).

The flight attendants have reason to tell you, first of all, to **keep your seat belt fastened**. People have broken their necks bouncing off the ceiling when a plane suddenly drops a few hundred feet in severe turbulence. But for anyone buckled in, a sudden drop, however stomach-churning, poses no danger.

Passengers are often disturbed when they look out the window in mild turbulence and see the wings flapping like a bird's. But the wings of a large commercial jet have never flapped so violently as to fall off. During certification, the wings of 777 are bent upward **24 feet** the flexibility required to pull out of an emergency dive.

Modern aircraft are built sturdily enough to hold together even with blast damage. In 1986, a TWA jet flying over Greece withstood the explosion of a bomb in a piece of luggage. Four passengers were killed, but the plane landed safely, and the other 117 people on board survived.

In 1988, after an explosive decompression caused by **metal fatigue** ripped an 18-by-14-foot hole in the top of the first-class section of a 737 flying over Hawaii, one flight attendant standing nearby was lost. But the **passengers were protected by their seat belts**.

Other perfectly survivable occurrences include violent engine shuddering, sputtering flames and engine shutdown. Even planes with only two engines are perfectly able to fly with just one. The likeliest outcome is a safe landing at the closest airstrip. In 1965, a 707 landed safely at a California air base after an engine fire had burned off 30 feet of one wing. (The engine fire suppression systems on today's airplanes would probably have kept that from happening.)

In February 2005, one of the four engines on a British Airlines 747 shut down shortly after takeoff from Los Angeles, yet the plane still flew safely to England - causing only a little controversy over the British pilots' interpretation of American flight safety rules.

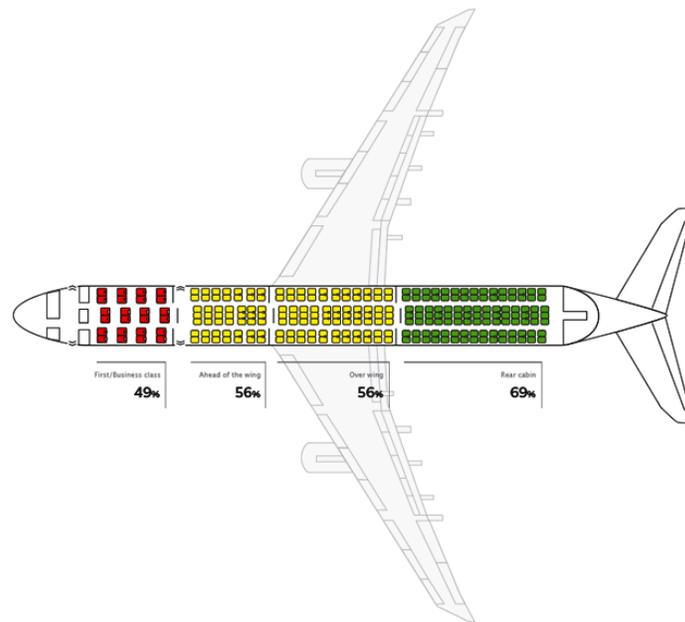
After an emergency landing or a crash during takeoff, it's important to **get out of the plane as soon as possible**. Fuel can easily leak and ignite. But evacuating a plane full of people is surprisingly easy, as long as passengers **don't panic**. When certifying the design of a new aircraft, the Federal Aviation Administration requires that it be possible to evacuate the plane **within 90 seconds** even with unrehearsed passengers and half the exits blocked.

This is exactly what happened in 2005 when an Airbus landing in Toronto overran the runway and crashed. The flight attendants **escorted out 309 passengers** and crew members, even though four exits were blocked and many passengers paused on the way out to pick up carry-on bags and aim cellphone cameras.

The plane then exploded in flames, burning the top half away and leaving the hull looking like a filleted fish.

It was not surprising, after the recent crash landing in London, how easily the flight attendants directed passengers and crew onto the emergency exit slides. Fortunately, few of us ever have the opportunity to witness **how well trained** the flight attendants are. But we should still pay attention to what they say.

### Survival Rate according to seating



### Series of New Regional Airworthiness Symposiums

Wichita, Kansas will be the site of the Professional Aviation Maintenance Association's (PAMA) first Regional Airworthiness Symposium, August 22 and 23, 2008.

These new symposiums will provide PAMA members and other industry professionals with **training and networking opportunities** provided in convenient formats and locations. The events will feature education tracks for management and **maintenance technicians**, along with tradeshow that show the latest technology by leading suppliers and manufacturers.





"We are very pleased and excited to be offering these new Regional Airworthiness Symposiums," Clark Gordon, Chairman, PAMA Board of Directors, said. "These events will be relevant to both management personnel and **technicians** because they are being developed by professionals from across the aviation industry."

The new regional symposium format was adopted at the recommendation of PAMA's Industry Advisory Board (IAB), a special committee appointed by PAMA's Board of Directors. The IAB comprises representatives from OEMs, vendors, industry publication, directors of maintenance, and education professionals.

The IAB will organize the management education tracks for the symposiums and PAMA's Technical Committee will select topics for the mechanics' track.

Details on the regional symposiums will be posted on PAMA's Web site – [Http://www.pama.org](http://www.pama.org)



Global Jet Services® and FlightSafety International® have developed the “Shared Resources” program. This exclusive service will provide better choices, unique training courses and higher standards of quality to our customers by having maintenance training choices from both companies. FlightSafety’s Event Base Agreement (EBA) customers now have the full access to take many of Global Jet Services courses through the EBA program.

Global Jet Services will be offering its first "Introduction to Aviation System Management" 2-day course on May 13-14, 2008 at its company training facility in Simsbury CT. This course is designed to be a follow-on to its **Human Factors** for Technicians and Maintenance Resource Management courses and is being offered by both Global Jet Services and Flight Safety International through their combined "Shared Resources Program". Details can be requested through Global Jet Services ([www.GlobalJetServices.com](http://www.GlobalJetServices.com)) or Flight Safety International ([www.fsi.com](http://www.fsi.com)). Our courses are designed for the AMT, business aviation, and approved repair station facilities.



For more information contact:

Global Jet Services  
Michelle Johnson  
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Keith McGann  
(201) 528-010

## Midnight Shift Nugget

### Shift Work Predicts Occupational Disability in Women

For many people, **shift work**, which refers to any work schedule other than the typical '9 to 5,' has a negative impact on health and well-being. Now a new study finds that shift work may also increase the risk of occupational disability in women. Using data from the Danish Work Environment Cohort Study, researchers found that among women, shift work was associated with **higher rates of disability**, even after adjusting for confounding factors such as body mass index (BMI) or ergonomic exposures. They **did not find** the same association among men. The good news is that there are ways of coping with the challenges of shift work. [Read the abstract](#), and then check out NSF's [Sleep Strategies for Shift Workers](#).



## Reel Stuff Film Festival Debuts In Dayton

The National Aviation Hall of Fame will host the First Annual Reel Stuff Film Festival of Aviation on April 24-26 in Dayton, Ohio. The series of eight classic and contemporary Hollywood productions and documentary films will **celebrate aviation history** and the passion for flight. Each movie will be introduced by an actor, producer, aerial coordinator or cinematographer associated with its production, and an audience question-and-answer session will follow. **Actor Cliff Robertson** will introduce the 1964 drama "633 Squadron," and aviator Clay Lacy will introduce the 1986 hit "Top Gun" and the 2005 IMAX film "Fighter Pilot: Operation Red Flag." Lacy was a pioneer in developing the air-to-air cinematic techniques used in both films.



The other films will be the classics "Battle Hymn" and "Battle of Britain," and the documentaries "One Six Right," "Pancho Barnes!" and "Speed and Angels." A schedule of Reel Stuff showtimes and locations, ticket prices (about \$10 per film), packages, presenters' bios, hotels, and other details can be found [online](#).



## AUDIO SAFETY TALKS!



### WHAT'S UP, DOCK?

It's one of the most dangerous places in the world to work, yet hundreds or thousands of people do it every day. Between the rear of a trailer or truck and the edge of a loading dock is a space about 15 inches (33 centimeters) wide. And it's a space in which people are injured or killed with alarming frequency. Workers anywhere who have to operate behind backing vehicles or on elevated platforms will benefit from this audio talk.

- [To listen to the talk, click this link](#)

## SAFETY ATTITUDES

### The Employee's Role in Workplace Safety

You consider yourself a safe worker because you generally follow the rules, wear the required PPE and take the necessary training. And you rely on your employer to keep you safe on the job. **So why would an accident happen to you?** Well, there's one thing your employer can't do—control your **actions** and your **attitude**.

Employers bear a huge responsibility to protect their workers from injury. The regulations they must abide by are very demanding, to say the least. But **employees must also take charge** of their own safety. Remember, you have the most to **gain** ... and the most to **lose**.

### A Good Safety Attitude

Having a good safety attitude isn't just about following procedure. It's **staying alert** to possible hazards and taking the extra time to use PPE. It also means that you're willing to **listen to suggestions** that might protect you. To have a good safety attitude, you need.

**Focus:** A good safety attitude means you focus on the task, you concentrate on the job. If you have other things on your mind, you may be distracted. And if you're bored, an accidental slip is easy.

**Strength:** No, this doesn't mean muscle strength; it's the strength to do the right thing, even when you are under pressure to take shortcuts. A good safety attitude means you have the strength to stick with the procedures.



**Time:** A good safety attitude means taking the time to do things correctly. Is saving a few minutes worth a lifelong injury? If you add up the life costs due to injuries, it's obvious that it's cheaper to do the job the right way the first time.

**Responsibility:** If you care about yourself and your co-workers, you will take responsibility even when a task "isn't my job." A good safety attitude means thinking of yourself as part of the team.

### Behavioral Warning Signs:

These behaviors indicate that you're not taking responsibility for your own safety.

- Being too **tired** for the job;
- Consuming **drugs** or alcohol at work;
- **Ignoring** written safety procedures;
- **Skipping** safety meetings;
- **Refusing** to wear PPE;
- Operating equipment **without training**; or
- Working **too quickly**.

### 8 Steps to Safety Responsibility

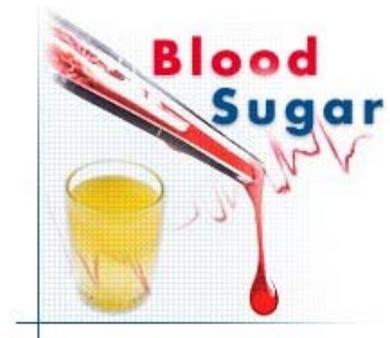
Here are 8 ways you can take responsibility for your own safety:

1. **Acknowledge** that you're not invincible;
2. **Attend** the proper training sessions;
3. **Know** the health and safety standards that apply to your work;
4. **Use** safety equipment, PPE and devices properly;
5. **Follow** all safety procedures and policies;
6. **Break** bad safety habits (such as overreaching on ladders);
7. **Support or join** workplace safety and health committees;
8. **Refuse** dangerous work.

### Screen Your Blood Sugar, Eat Better

Got a blood sugar problem? If you do, there's a good chance you don't know it; about one-third of people with type 2 diabetes are unaware of it.

So get your blood sugar tested. Why? For one thing, it's the first step to getting treated. It's also key to eating right. People who've been diagnosed pack more protein, fiber, vitamins, and minerals into their diets than people who don't know they have diabetes.



## Should You Be Screened?

**Type 2 diabetes** has few symptoms until the advanced stages, so without testing, it's unlikely you'd discover it. If you are 45 or older, the American Diabetes Association recommends **screening** for type 2 diabetes every 3 years. Screening at a younger age may be considered if you have risk factors for the condition.

[Here's a list of diabetes risk factors.](#)

## Nobody's immune to back pain

Back pain is a **leading safety problem**, second only to common colds as the reason people miss work.

Anyone who has to move heavy objects, work in awkward positions, hold one position for a long time or perform certain tasks at a fast pace can get hurt.

### These tips will help protect your back while lifting:

- Don't bend over the object you're lifting. **Bend your knees**, squatting in front of the object to reach it.
- **Lift slowly and carefully**, using your leg and arm muscles to lift, not pulling with your back.
- Keep your **back straight and your head up**.
- Keep the **object as close to your body as possible**, gripping with the whole hand (there's virtually no strength in fingertips).
- Keep **abdominal muscles tight** while making the lift, and avoid twisting. Turn the foot and point it in the direction of eventual movement.



Many work situations can put you in an awkward position which could distort the spine, put unbalanced pressure on discs and strain arm, leg or back tissues.

### Here are suggestions for avoiding injury while working in awkward positions:

- **Raise bins and containers** off the floor and/or tilt them to reduce bending and over-reaching
- When working overhead, stand on a steady, adjustable platform. **Keep back posture in its natural curve.**
- In confined spaces, plan your work and reduce clutter that will further confine. Have adequate lighting

- **Don't hold an awkward position too long.** Pause often to stretch and straighten.
- When **leaning forward, support the weight** of your upper body on your free hand and arm. This relieves pressure on your lower back.
- Position yourself as close as possible to the job, **avoid over-reaching.** When on ladders or scaffolding, **use tools with longer handles.**
- Place your work below the shoulder and **above the knees.**
- **Push**, rather than pull loads.

If an item is too heavy, bulky or high for one person, a team should move it. If still too hazardous, then use conveyor belts, hand trucks, mechanical lifts, hoists or dollies.

**Don't store items to be handled on the floor.** Whenever possible, keep them between your belt line and shoulders.

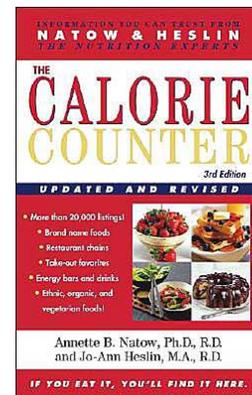
To reduce risk of lower back stress and strain, you can get training in lifting techniques, physical conditioning or stretching. Perhaps you can also **redesign the job** and save your back.

## **Calorie counting made easy**

Eat less, exercise more. If only it were that simple! As most dieters know, losing weight **can be very challenging.** A range of influences can affect how people gain and lose weight. But a basic understanding of how to tip your energy balance in favor of weight loss is a good place to start.

Start by determining how many calories you should consume each day. To do so, you need to know how many calories you need to maintain your current weight. Doing this requires a few simple calculations.

**First**, multiply your current weight by 15 — that's roughly the number of calories per pound of body weight needed to maintain your current weight if you are moderately active. Moderately active means getting at least **30 minutes of physical activity a day** in the form of exercise (walking at a brisk pace, climbing stairs, or active gardening). Let's say you're a woman who is 5 feet, 2 inches tall and weighs 150 pounds, and you need to lose about 12 pounds to put you in a healthy weight range. If you multiply 150 by 15, you will get 2,250, which is the number of calories per day that you need in order to maintain your current weight (weight-maintenance calories). To lose weight, you will need to get **below that total.**



For example, to lose one to two pounds a week — a rate that **experts consider safe** — your food consumption should provide 500–1,000 calories less than your total weight-maintenance calories. If you need 2,250 calories a day to maintain your current weight, reduce your daily calories to 1,250–1,750. If you are sedentary, **you will also need to build more activity into your day.**

In order to lose at least a pound a week, try to do at least 30 minutes of physical activity on most days, and reduce your daily calorie intake by at least 500 calories. However, calorie intake should not fall below 1,200 a day in women or 1,500 a day in men, **except under the supervision of a health professional.** Eating too few calories can endanger your health by depriving you of needed nutrients.

### Meeting your calorie target

How can you meet your daily calorie target? One approach — probably the most accurate — is to add up the number of calories per serving of all the foods that you eat, and then plan your menus accordingly. You can buy books that list calories per serving for many foods. In addition, the nutrition labels on all packaged foods and beverages provide calories per serving information. Make a point of **reading the labels** of the foods and drinks you use, noting the number of calories and the serving sizes. Many recipes published in cookbooks, newspapers, and magazines provide similar information.

If you hate counting calories, a different approach is to restrict how much and how often you eat, and to eat meals that are low in calories. Indeed, dietary guidelines issued by the American Heart Association **stress common sense** in choosing your foods rather than focusing strictly on numbers, such as total calories or calories from fat. Whichever method you choose, research shows that a regular eating schedule — with meals and snacks planned for certain times each day — makes for the most successful approach. The same applies after you have lost weight and want to keep it off. Sticking with an eating schedule increases your chance of maintaining your new weight.

Some people focus on reducing the fat in their eating plan because, at nine calories per gram, fat by weight contains **more than twice as many calories** as carbohydrates or proteins (four calories per gram). By substituting lean cuts of meat for fatty ones, avoiding high-fat packaged foods and **snacks**, and refraining from fat-rich products such as butter, mayonnaise, and salad dressings, you can cut out dozens or even hundreds of calories per day. On the other hand, many people mistakenly think that cutting fat always means cutting calories. Some fat-free foods actually contain more calories than the regular versions because manufacturers use **extra sugar** to make up for the flavor lost in removing the fat. Moreover, low-fat or nonfat foods are not low-calorie if you consume them in large quantities.

**When you can't count calories**

*Guidelines to follow when straight calorie counting is impractical.*

1. Eat foods that are filling and low in calories. That means meals and snacks made with whole grains, such as brown rice, whole-wheat bread, and oatmeal, as well as legumes, such as lentils and other beans.
2. When you eat meat, choose lean cuts of meat and modest amounts — about 3½ or 4 ounces per serving.
3. Avoid fried foods. For stovetop cooking, it's better either to stir-fry foods in nonstick pans lightly coated with a cooking-oil spray or to braise them in broth or wine. Baking, broiling, and roasting add no extra fat to your meals.
4. Use low-fat or nonfat dairy foods. Milk, yogurt, and cheese are good sources of protein and calcium, but the whole-milk versions of these dairy products are very high in fat.
5. Avoid fast foods. Hamburgers, chicken nuggets, French fries, and other fast-food meals and snacks tend to promote weight gain for two reasons. First, they are high in fat, calories, or both. Second, the “value meals” are often excessively large and tempt you to overeat.

**Picture This!**

When you move material or items, it always helps to make sure they're **properly secured** for transport. While they may be heavy and difficult to move at first, these loads quickly build up momentum, along with whatever you're using to transport them. And there is no finer way to find out whether you've secured the item or material properly than the time-honored **“sudden stop.”**



